Program Descriptions

Ball State University

Department of Physics and Astronomy - Ball State University, Muncie, IN
Thom Robertson - Astronomy Program Director

Ball State University - Total Enrollment 18000 undergraduate + 2000 graduate
minimally selective state university

Department of Physics and Astronomy
14 Faculty members
11 physicists and
3 astronomers

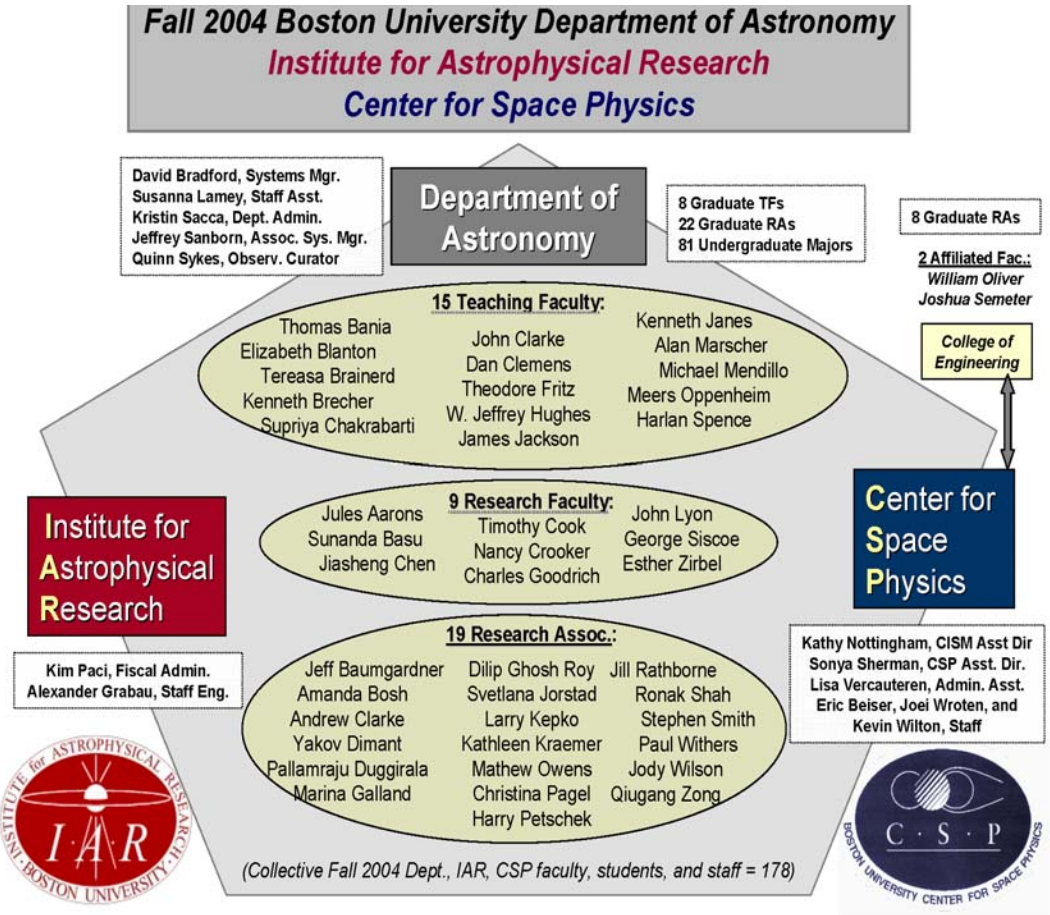
Degrees
1. B.S. Physics,
2. M.S. in physics,
3. M.A.E. - science education
4. Ed.D. - science education

Graduation Rates
average 4-8 B.S. Degrees/yr
average 3-5 M.S. degrees/yr

Astronomy Program
1. minor in astronomy (5-10 per year)
2. general education astronomy enrollments about 2000 per year
(approximately 50% of department total)
3. astronomy research for physics graduate students (1-3 per year with M.S. degree)

Astronomy Research (9 hr teaching and 3 hr research load per term)
1. CCD imaging on campus with 0.35 m and 0.4 m SCT telescopes with CCD
2. charter member of National Undergraduate Research Observatory (NURO)
with access to 0.78 m telescope at Lowell Observatory
3. primarily supports undergraduate and graduate level student research projects

Astronomy Education (many students - few TA's & fewer qualified TA's)
1. personal response systems
2. LON-CAPA web-based homework system



TEACHING AND RESEARCH PROGRAMS AND FACILITIES:

Introductory Courses – We currently offer four courses with 700 students. Astronomy faculty have a major role in the College of Arts and Sciences "Core Curriculum."

Undergraduate Concentration in Astronomy – Based on a recent AIP survey we have the second largest program in the country in 2003 (12 graduates).

Graduate Program – We presently have 30 graduate students and average 3 PhDs/year.

Research – Two research centers, the Center for Space Physics (CSP) and the Institute for Astrophysical Research (IAR) operate within the Astronomy Department and support individual faculty research and the Center for Integrated Space Weather Modelling.

Boston University/Lowell Observatory Partnership – BU and Lowell jointly operate the 1.83-meter Perkins Telescope near Flagstaff, AZ. Through a new NSF program (PREST) we will soon offer public access time on the Perkins Telescope.

California, Davis, University of

Dept of Physics, University of California Davis

Degree programs:
BS Physics, average 150 undergraduate majors with 30 graduating/year.
PhD Physics, 122 students currently, entering class of 30, PhDs granted average 15 per year. This 15/30 discrepancy comes partly from the 7 year lag combined with growth.

The department has 42 faculty plus 10 emeritus plus 6 adjunct.
Our astrophysics group has 12 academic faculty plus 5 research faculty.
11 Postdocs and 16 graduate students.
Several faculty are affiliated with the co-located Center for Computational Science and Engineering.
Web address of astrophysics group: http://www.physics.ucdavis.edu/Cosmology/

Research areas for Astrophysics faculty:
Physics of the early universe, dark energy models (Albrecht, Kaloper, Knox);
Observational cosmology, weak lensing, strong lensing, large scale surveys (Fassnacht, Knox, Margoniner, Tyson, Wittman);
Galaxy cluster studies, AGNs (Becker, Gregg, Lubin, Stanford);
Gamma Ray Astronomy (Chertok, Tripathi);
Low mass stars, IR spectroscopy (Boeshaar, Richter);
Theoretical particle astrophysics + quantum gravity (Carlip, Gunion).

Telescope access + Projects:
Keck telescopes, Lick Obs, Deep Lens Survey (NOAO 4m telescopes), GOODS HST survey, CASTLES survey (HST), CLASS survey (VLA), FIRST Survey (VLA), ANGLES Consortium, Planck, MAGIC gamma ray telecope, Large Synoptic Survey Telescope project (UCD is an institutional member of LSST Corp.)

Public Outreach:
Numerous public lectures in Davis, Sacramento and the Bay Area. Also, active involvement in campus programs for groups underrepresented in science and summer programs for promising high school students.

Colorado, Boulder, University of

University of Colorado, Boulder
Department of Astrophysical and Planetary Science
Chair: James Green

22 full time faculty
1 senior instructor

49 Graduate students: all are Ph.D. Students
132 undergraduate majors

Member of ARC consortium (Apache Point Observatory)

The program has broad research interest spanning theory, observing and instrumentation - including planetary, astrophysical and magnetospheric research. There are several major space instrumentation programs in the department.

Our primary concerns at the moment are the recruitment and quality of our graduate students, as well as the eroding state funding situation in Colorado. We currently offer all incoming students either a teaching or research assistantship, including full tuition remission. TA's and RA's are equally compensated. We have a written exam as well as a research/oral presentation for advancement to candidacy. I am interested in discussing with other chairs how they are recruiting their incoming graduates class, and whether as a body, astrophysics is attracting the best possible undergraduates into our graduate programs.

Department of Astronomy

Astronomy was first taught at Columbia in 1757 and, during the intervening 247 years, has formed an important part of the University's curriculum, both as a discipline in which new scholars are trained, and as an introduction to the methodologies and perspectives of science for students pursuing other areas of inquiry. Columbia's first telescope was lent to George Washington for use in the Battle of Long Island; both the telescope and the battle were lost. It was thus not until 1857 that the first Professor of Astronomy was appointed. Early research highlights included the first applications of photography to stellar astrometry and spectroscopy (1863), and the first use of "modern" computing engines for calculations and data reduction (1934).

The Department currently includes twelve full-time faculty (seven full Professors, one Associate Professor, and four assistant professors). We maintain a research and graduate training program well-integrated with our seven faculty colleagues in Physics who pursue astrophysics research through the Columbia Astrophysics Laboratory (CAL) which manages all grants and contracts, maintains a computer network, and provides other research infrastructure. The current annualized grant volume in CAL is $6.6M, a three-fold increase over the past decade; CAL hosts 27 PhD researchers in addition to the Faculty.

We also maintain extremely robust and productive relationships with our three faculty colleagues at Barnard College with whom we closely coordinate undergraduate teaching, and with our three faculty colleagues at the American Museum of Natural History who hold real adjunct appointments, mentor our PhD students, sit on our committees, and teach courses. In the past three years we have hired (or acquired) ten outstanding young faculty: Amber Miller (Physics – CMB), Greg Bryan (Astronomy –Early Universe simulations), Zoltan Haiman (Astronomy – Cosmology), Andrei Beloborodov (Physics – High Energy Astrophysics Theory), David Schiminovich (Astronomy – GALEX principal coI), Kristen Menou (Astronomy – Theory), Janna Levin (Barnard – GR), Lam Hui (Physics – Cosmology), Szabi Marka (Physics – LIGO), and Ben Oppenheimer (AMNH – Coronography). The effects of a dramatically decreased median faculty age are palpable and most refreshing.

This semester represents yet another new high in our undergraduate enrollments, with 565 undergradutes registered in 13 undergraduate classes and 41 registered students in four graduate classes. We currently teach Astronomy to over 25% of all Columbia and Barnard undergraduates. We have also led the development of the first science course in Columbia's famed Core Curriculum; as of this fall, all 1100 first-year students are required to take this course as part of the general education Core. We currently have 24 Astronomy PhD students (14 men and 10 women) as well as eleven Physics PhD students pursuing astrophysical research projects. We awarded five Astronomy PhDs in the past year; the recipients had a mean time to PhD of six years, and took up postdocs at Arizona, Berkeley, Michigan, STScI, and the University of Victoria.

We currently operate the MDM Observatory (2.4m + 1.3m) on Kitt Peak with Dartmouth, Michigan, and Ohio State. We are also active in commissioning the 6-meter Large Zenith Telescope, a mercury liquid mirror telescope outside Vancouver which has recently delivered seeing-limited images for a total construction cost of under $1M; we are planning significant new projects which apply this technology.

Delaware, University of

University of Delaware
Department of Physics and Astronomy and Bartol Research Institute

RESEARCH AREA DESCRIPTION (from www.physics.udel.edu)
Ground-based and space-based observational programs, theory, and data analysis all contribute to our program.

Our research in stellar astrophysics includes the study of brown dwarf stars, thermal and non-thermal processes in the sun and cool stars, convection in cool stars, stellar winds, and the late stages of stellar evolution, including the formation and evolution of white dwarfs. Data from the Chandra and Newton-XMM X-ray telescopes, the Hubble Space Telescope, the Far Ultraviolet Spectroscopic Explorer, YOHKOH, the Solar and Heliospheric Observatory, from the 2MASS, IUE and ROSAT archives are used to test and refine our theoretical ideas. We have access to an 0.6-m telescope which is located one half hour from campus at the Mt. Cuba Astronomical Observatory. Despite Mt. Cuba's location on the cloudy east coast, this telescope, equipped with a CCD, can and does obtain high quality high-speed photometry of white dwarf stars; see our data on the Whole Earth Telescope's web page. Work in observational cosmology includes mapping the hydrogen content of small groups of galaxies using the VLA radio telescope.

Our research in astronomy is closely coupled to the research of the particle astrophysics group (which has a major role to play in the ICECUBE project, developing the most sensitive particle astrophysics detector ever built in the Antarctic) and the space physics group.

DEGREES
Since our academic department includes physics and astronomy, both our undergraduate and our graduate degrees are offered as physics degrees. The undergraduate degree has a specifically delineated concentration in astronomy. Graduate students have to pass a Ph.D. qualifying exam which is primarily in physics.

FACULTY

Astronomy and Astrophysics:	Particle Astrophysics (including theoretical particle physics):	Space Physics
John E. Gizis	Stephen M. Barr	John W. Bieber
James MacDonald	Thomas K. Gaisser	Paul A. Evenson
Dermott J. Mullan	Chung Ngoc Leung	William H. Matthaeus
Stanley P. Owocki	David Seckel	Norman F. Ness
Harry L. Shipman	Qaisar Shafi	
Barbara A. Williams	Todor S. Stanev	

University of Hawaii at Manoa

Institute for Astronomy
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INTERNET: wynnwill@ifa.hawaii.edu

Astronomy Education at University of Hawaii (Manoa)

- Astronomy Education officially comes under "Department of Physics and Astronomy", but in practice it organized as an activity of the Institute for Astronomy (IfA), a large research organization. Organizationally this is a kluge, but in practice it works with very few problems. Astronomy and Physics graduate programs operate independently.

- The director of the IfA is Rolf Kudritzki. Responsibility for the teaching programs and student affairs is delegated to the "graduate chair" who is currently Gareth Wynn-Williams.

- We offer PhD, and MS degrees in astronomy. There is no astronomy major at UH-Manoa, though one is offered at the separate campus of University of Hawaii at Hilo. At Manoa we offer a number of 100-level and 200-level astronomy courses, including labs, reaching some 500 students per semester.

- Total number of faculty is 47, including limited term appointments. Most are based on Oahu (Honolulu) but a few are on Maui and the Big Island. Most tenured astronomers hold a joint research/instructional appointment and teach one graduate or undergraduate course per academic year.

- The astronomy graduate program currently has 31 students, of which 11 are female, and 9 are foreign. Almost all graduate students aim for the PhD rather than a terminal masters.

- Currently 14 postdocs at the IfA

- Over last 30 years, 124 students have passed through our program. 67% of these earned the PhD and a further 18% earned a terminal masters degree.

Astronomy Program at Iowa State University

1. The Department

The program is part of the Department of Physics and Astronomy. The department has 41 tenure track faculty and two searches in progress. The astronomy group consists of 5 tenure track astronomers/astrophysicists and 3 particle astrophysicists. Two of the astronomers are not yet tenured. The research activities of the particle astrophysicists are funded as part of the "umbrella" high-energy physics grant from the U.S. Department of Energy.

2. Degrees offered

The department offers both an M.S. and a Ph. D. in Astrophysics. There is no astronomy degree at either the undergraduate or graduate level. The department does offer an undergraduate minor in astronomy.

3. Facilities

The department operates an observatory with a 24" optical telescope equipped with a Newtonian high-field CCD spectrometer. The observatory is used for both teaching and research. An observatory manager is funded by the University.

The department is the headquarters for the Whole Earth Telescope, an asteroseismology collaboration.

Louisville, University of

The astronomy program at the University of Louisville is in the Department of Physics of the College of Arts and Sciences. We have 13 full time, tenure track, faculty in the department, two short term faculty, and we expect to add two more tenure-track positions soon. The department offers a B.A., a B.S. with a choice of tracks including astrophysics, and an M.S. that includes a thesis option. We have a joint doctoral programs in chemical physics with the Department of Chemistry, and in physics and astronomy with the University of Kentucky. We are planning a doctoral program of our own, but it will be focused on the unique strengths of our department's research activities. At the present time we have about 100 undergraduate majors and 20 graduate students. Our externally funded research budget in 2004-2005 totals approximately $3M in astrophysics and applied optics, condensed matter physics, and high energy physics.

The Department of Physics faculty includes one astronomer now, a new position in astronomy which we are currently searching to fill, and a cosmologist/string-theorist. The Department of Mechanical Engineering has a tenured professor with a program in planetary atmospheres, and his group is hosting the 36th Annual DPS Meeting in Louisville the week of November 8.

The university operates the Gheens Science Hall and Rauch Planetarium under the administration of Information Technology. Our astronomy education and public outreach programs are through the planetarium, and some sections of our introductory general education astronomy classes are taught in the immersive visualization facility there. The planetarium has three full time staff and employs a few students from physics and engineering. One of their staff also teaches a section of our introductory class. Typically we offer 3 sections a semester and one in the summer with a total enrollment of 900 students a year. We also offer an astronomy laboratory in 8 sections of 18 students each semester. Both lecture and lab sections are oversubscribed, and this enrollment pressure is allowing us to add faculty in astronomy and to justify the activities of the planetarium to the central administration.

The department has a teaching and research observatory with 20-inch and 16-inch computer-controlled and remotely operable telescopes located in a nearby suburban/rural county. With NASA support we are developing a robotic telescope in Australia at Mt. Kent in collaboration with the University of Southern Queensland. We expect it to be operational by early 2006.

Massachusetts, University of

DEPARTMENT OF ASTRONOMY
UNIVERSITY OF MASSACHUSETTS

Astronomy at the University of Massachusetts began within the Department of Physics and Astronomy in the 1960's, and we became an independent department four years ago. We currently have 13 tenure-system faculty, 4 research faculty, 11 postdocs, 30 graduate students, and about 60 undergraduate astronomy majors. We currently operate two observing facilities: the Five College Radio Observatory (FCRAO) 14-m diameter millimeter wavelength telescope, located in central Massachusetts; and the Infrared and Optical Telescope Array (IOTA), a three-element interferometer located in Arizona that is jointly operated with several institutions. We are currently constructing a 50-m diameter millimeter wavelength telescope, the Large Millimeter Telescope (LMT), jointly with Mexico. The LMT is being built atop Sierra Negra, a volcanic peak located in central Mexico, at an elevation of approximately 4600 meters. In addition, we have several Beowulf-class parallel supercomputers that serve the needs of our computational astrophysics group.

The completion of the Two Micron All Sky Survey (2MASS) is one of the Department's major successes. The University was the lead institution in a survey of the entire sky in three infrared wavelengths to sensitivity 50,000 times greater than the previous such survey, more than 25 years ago. The survey was carried out with two dedicated 1.3-m telescopes located in the northern and southern hemispheres. Observations, which began in 1997 and concluded in early 2001, produced two major catalogs, released in March 2003, detailing nearly half a billion objects in the infrared sky.

The current research strengths of the Department are science millimeter and submillimeter wavelengths (including instrument development) and extragalactic theory (emphasizing computational astrophysics). We have long felt that the observational programs need breadth beyond radio astronomy and we are in the process of strengthening our non-radio wavelength observational program. One important focus of these efforts is the study of how structure first formed in the early universe, and how this structure evolved into the present-day galaxies and galaxy clusters (an area where the LMT will be extremely productive). We anticipate making three hires over the next several years expanding our faculty in these focused areas.

The astronomy degrees offered by our Department are unique among public universities in New England. Students throughout New England are eligible for admission to astronomy under the auspices of the New England Regional Student Program, which provides out-of-state students reduced tuition in degree programs not offered by their own state universities. For non-majors, we currently teach approximately 1000 students per semester in our introductory courses. We are experimenting with technological additions to our introductory courses to see whether they improve student learning. The use of hands-on learning, cooperative activities, and technology we believe will help engage the students in the classroom. The Department is also part of the Five College Astronomy Department, an inter-institutional partnership that combines the resources of a large public research university and that of four prestigious, private liberal arts colleges. At the University we have had a steady growth in astronomy majors, doubling the number in the past eight years. We have recently revamped our majors programs, providing several degree options, and have instituted a

research intern program during the summer, which provides an educational and structured research experience for undergraduates at the five institutions.

We are currently reviewing our graduate program. At issue are the number of required courses, whether graduate physics courses are filling our educational needs, and the number and timing of small research projects that proceed the thesis. Our goal is to streamline our program to place more emphasis on research.

Michigan State University

The astronomy program at Michigan State University is part of the Physics & Astronomy Department. There is an Astronomy Group with its own Associate Chair. In addition, the astrophysics effort within the department includes a number of nuclear physicists at the on-campus National Superconducting Cyclotron Laboratory (NSCL), and there is growing interest in astrophysics within our strong High-Energy Physics Group, in the areas of cosmology and cosmic ray observations.

The Astronomy Group currently has 9 faculty members (8 permanent positions), 4 postdocs, 16 grad students, and about 45 undergraduate astrophysics majors. Most of the astronomy faculty work on the observational side, using a mix of ground-based optical and infrared telescopes on the ground, plus the Hubble, Chandra, and Spitzer observatories from space. We are a partner in the new 4m SOAR telescope, located in Chile and dedicated in April 2004. We currently are building a facility IR imager for SOAR. The Astronomy Group also includes three theorists, working on the Sun's atmosphere, clusters of galaxies, cosmology, accretion onto neutron stars, and the ensuing chains of nuclear reactions.

We offer a separate PhD program in Astrophysics, with different (but overlapping) course requirements than the Physics PhD program. The astrophysics PhD program is aimed at students who want to study the nature and content of the universe using data gathered with a wide variety of space and ground-based telescopes operating over the whole electromagnetic spectrum from radio wavelengths through gamma-rays. It is structured to be similar to the PhD programs found in separate astronomy departments elsewhere, with a series of 5 astronomy core courses (including one in nuclear astrophysics) plus 3 physics core courses. However, our emphasis is on rapidly moving students into research. We require students to carry out a 2-semester research project in their second year, before being advanced to candidacy and starting on their PhD thesis.

We take in 4-5 new astrophysics grad students each year. We are keenly interested in recruiting graduate students of an ever-higher caliber. Our courses are structured to try to attract such students, and those students then have excellent research opportunities working with our young, highly-qualified faculty and with the new SOAR 4m telescope. We will be offering new fellowships next year to further help us to attract such students.

Two astrophysical research institutes are housed within the Physics & Astronomy Department. MSU is a member of the Joint Institute for Nuclear Astrophysics (JINA), an NSF-funded Physics Frontier Center that also includes faculty at Notre Dame and the University of Chicago. MSU's JINA participants include theoretical and experimental nuclear physicists and theoretical and observational astronomers, both within the Astronomy Group and at NSCL. JINA funds a number of grad students and postdocs at MSU.

The other research institute is the new Center for the Study of Cosmic Evolution (CSCE), which is funded by MSU. It brings together the whole astrophysics community at MSU in an interdisciplinary study of the observable aspects of the evolution of galaxies and of the universe, using the new SOAR telescope as its major tool. CSCE will also fund graduate students and postdocs starting in 2005.

National Radio Astronomy Observatory

NRAO - by M. Goss. Head Division of Scienceand Academic Affairs- 6 Nov 2004

The National Radio Astronomy Observatory is an NSF funded observatory, administered by Associated Universities, Inc. TheNRAO is located in Tucson, AZ, Socorro NM, Charlottesville,VA, Green Bank W Va , Santiago Chile and the ten VLBA sites from the Virgin Islands to Hawaii. The major instruments are the Very Large Array (VLA), the Very Long Baseline Array (VLBA), and the Green Bank Telescope (the Robert C.Byrd telescope). New instruments under construction are the EVLA (the Expanded VLA) and ALMA in Chile (partners ESO and the NAO of Japan). The EVLA I will be completed in circa 2010 as well as ALMA. EVLA I is an international project also with major contributions from Canada and Mexico. The North American ALMA Science Center is now being established in Charlottesville VA at the rennovated NRAO headquarters.

NRAO has historically placed a great deal of emphasis on supporting undergraduate and graduate education, as well as maintaining close ties with US astronomy departments. The NRAO summer student program has been in place for 45 years with 950 participants in this period. At present 30 undergraduate and graduate students participate in a 10-12 week summer program of research at an NRAO site under the supervision of an NRAO staff member. About 15 of these are supported by the REU NSF program. In a typical year between 8 to 12 Phd's are granted with major VLA content.

Once every two years the NRAO Synthesis Imaging Summer School is held in Socorro (last school was June 2004) and now once per two years a Single Dish Summer School is held with the sponsorship of NAIC and NRAO at Arecibo or Green Bank. Every few years books(ASP series) are produced that summarize the lectures.

NRAO encourages undergraduate use of the VLA and the VLBA. Modest amounts of observing time are available for class projects. Frequent users are e.g. Haverford, Agnes Scott and Harvard . The Haverford group visits the VLA on an annual or bi-annual basis. Graduate radio astronomy classes have visited the VLA from Illinois and Caltech. The NRAO staff provided extensive tours and lectures over a seveal day period.

NRAO supports graduate students in several manners. These various programs are described in our student and visitor brochure that I will have at the meeting in Chicago. The GBT student support program began in 2002 and is decribed at the GBT web site at
http://wiki.gb.nrao.edu/bin/view/Observing/GbtStudentSupportStatus

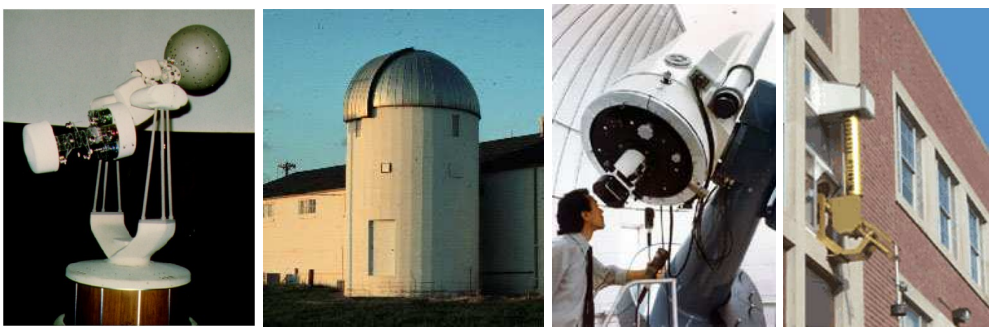
In 2003 10 graduate students were supported for a particular GBT observing program over a one or two year period at a rate of a few $K to $30K per grant.

The NRAO also has a pre-doctoral support program which traditionally has been been for advanced graduate students with visits of 1-2 years resident at a NRAO site. We are now more flexible and can support shorter visits. At any particular time we have 4-6 predocs at NRAO sites. NRAO envisions that possibly the EVLA and certainly ALMA will have an enhanced student and even observer support program.

In addition, NRAO welcomes visitors to NRAO for summer visits and partial sabbatical support. Although funds are limited, we plan to enchance this program. The Jansky Fellow program has been modified in the last year and both internal (NRAO sites) and external (US universities) Jansky Fellows are now supported. In 2004, we have Jansky Fellows at CfA, MIT, Johns-Hopkins and Maryland. At present there is one Jansky Fellow at Green Bank, one in Charlottesville and four in Socorro.

In summary, NRAO is committed to increasing our interactions with the US university community. In the last year, we have had extensive conversations within NRAO and with our Users' Community on possible ways to increase this interaction. Bruce Balick visited Charlottesville a year ago and spend several days discussing many ideas with a number of us. The dicsussions continue. We welcome any input you may have on ways to enhance the NRAO presence with the US astronomy community. As ALMA comes into use in the next half decade, we expect that many new NRAO users will be drawn to this new powerful instrument for high resolution observations from 7 mm to the sub mm bands.

ASTRONOMY AT
THE UNIVERSITY OF NEBRASKA, LINCOLN



Overview: a small astronomy program in a predominantly physics department. Main department emphases: condensed matter, atomic physics (used to get significant NASA funding), and experimental high-energy physics (includes cosmic ray research). B.S., M.S., and Ph.D. in physics.

Enrollments: Currently ~3 astrophysics graduate students (1 Ph.D., 2 M.S.). Each year 2 to 5 undergraduate physics majors take the "astrophysics track", and another half dozen take an astrophysics minor.

Facilities: two small research/teaching telescopes, one on campus and the other at a moderately-dark location. On-campus teaching solar telescope. 100-seat planetarium.

Areas of interest (chronological order):

- Close binary stars *http://www.physics.unl.edu/directory/leung/leung.htm*
- Cepheid variables *http://www.physics.unl.edu/directory/schmidt/schmidt.html*
- Active galactic nuclei *http://physics.unl.edu/directory/gaskell/gaskell.html*
- Cosmic Rays *http://cse.unl.edu/~gsnow/crop/crop.html; http://www.auger.org/*
- Astronomy education *http://physics.unl.edu/directory/lee/lee.html*

Job opening:

1-year lectureship for a teacher with a Ph.D. in astronomy or physics education to teach multiple sections of "Ast. 101" and develop educational materials. Note that this is for the calendar year 2005 - starting January 1st, 2005.

http://physics.unl.edu/10-27-2004%20Astronomy%20Lecturer%20%20Job%20Announcement.pdf

Northwestern University

NORTHWESTERN UNIVERSITY
Department of Physics and Astronomy (Chair: Mel Ulmer)
Astrophysics Group (Director: Dave Meyer)

The Astrophysics group at Northwestern University involves 7 of the 26 tenure-line faculty in the Department of Physics and Astronomy.

Faculty: Profs. Dave Meyer, Ron Taam, Mel Ulmer, Farhad Yusef-Zadeh,
Assoc. Profs. Giles Novak, Fred Rasio, Asst. Prof. Vicky Kalogera,
Research Asst. Prof. Jim Lauroesch, Lecturer Michael Smutko (joint with Adler Planetarium)

Postdocs: 7
Graduate Students: 15
Undergraduate Physics Majors with Concentration in Astrophysics: 15

Research Interests

Theory: Dynamics of dense star systems and extrasolar planets; physics of neutron stars and black holes; evolution of compactobjects in binary systems; gravitational-wave astrophysics

Observation: Optical/UV observations of interstellar gas/dust and QSO absorption-line systems; sub-mm polarimetry of interstellar magnetic fields; radio/IR/X-ray observations of supernova remnants, star formation regions, and the Galactic Center

Instrumentation: X-ray mirror fabrication; UV detector development; far-IR and sub-mm polarimeter development

Research Funding: $1.8 million over the past fiscal year which is a 50% increase over the previous year

Recent Faculty Awards/Honors: Kalogera received AAS/AAUW Cannon Award, Packard Fellowship, and Cottrell Scholar Award; Meyer named KoldykeOutstanding Teaching Professor by NU

Most of the NU astrophysics research/teaching effort is housed in thehistoric (est. 1888) Dearborn Observatory building on campus. Theoffice and public spaces in the building were recently renovated in a way that both accentuates its history and adds modern facilities and decorations. The historic 18.5-inch Clark refracting telescopehoused in Dearborn (which, along with the dome, was completely refurbished several years ago) is heavily used by the 500 students that enroll in our introductory astronomy courses every year. The telescope is also the focus of our NU alumni and public outreach efforts with public observing sessions every Friday night and special programs in concert with Adler Planetarium and astronomical events such as eclipses.

The number of students pursuing their graduate studies in astrophysics at NU has doubled over the past three years. The number of physics majors specializing in astrophysics has also increased and now account for half of all NU undergraduate physics majors. We continue to encourage all of our physics/astrophysics students to tackle undergraduate research projects - the recipients of our Departmental Outstanding Senior Thesis Award the past three years (the first three years in which this award was offered) were all in astrophysics.

Astronomy and Astrophysics at Ohio University

The University. Ohio University was the first institution of higher education in the Old Northwest, and celebrated its bicentennial in 2004. The main campus is in Athens, in southeast Ohio. Ohio U is part of the state university system of Ohio, and has an enrollment of $\sim 20,000$ students, 3,000 in graduate and professional programs. In 2004 there was a major turnover of the upper administration; the new president has stated a priority of significantly increasing research activity and grant funding.

The Department. Astronomy is housed in the Department of Physics and Astronomy, which has 28 tenured or tenure-track faculty. Areas of research expertise include astrophysics, biophysics, condensed matter physics, nanoscience, and nuclear/intermediate-energy particle physics. After a generational turnover in the last decade, the current faculty is relatively young and active in research.

Academic Programs. The Department awards B.S. degrees in astrophysics and physics, and M.S. and Ph.D. degrees in physics (including astrophysics) through the College of Arts & Sciences. The Department also offers B.S. degrees in astrophysics, engineering physics, and physics through the Honors Tutorial College (HTC), which provides an Oxbridge-style experience with major-field coursework taught in tutorials. In 2004 an HTC engineering physics major was one of two Ohio University students awarded Marshall Scholarships. The number of undergraduate majors in the Department overall is 62 and has been increasing. The Department currently has 70 graduate students.

Astronomy/Astrophysics. Four members of the Department have a primary research focus in astronomy (M. Böttcher, B. McNamara, J. Shields, T. Statler), and 12 graduate students are currently pursuing a specialization in astrophysics. The primary research areas are extragalactic, and include X-ray studies of galaxy clusters and normal galaxies, multiwavelength observations of AGN, theoretical work on accretion and radiative transfer, modeling of galactic structure and dynamics, black hole mass measurements, and nebular astrophysics.

In 2004 the Ohio University Board of Trustees approved the creation of the Astrophysical Institute (ApI). The ApI provides a vehicle for increasing financial support and visibility for the group, and incorporates as affiliate members other faculty with related research interests (nuclear astrophysics, planetary geology). Tom Statler has been appointed Director of the ApI.

Nuclear Astrophysics. Nuclear physics has been a traditional strength of the Department. There is growing interest in problems related to astrophysical phenomena, including reaction rates in stars, the r-process, neutron star structure, and neutrino physics. The Department operates a 4.5 MV tandem Van de Graaff accelerator that was installed in the 1960s. This machine has found new life in the hands of one of our younger faculty members, who is using it to carry out low-energy experiments motivated by astrophysical questions.

New Initiatives. In 2004 the ApI and OU's Institute for Nuclear & Particle Physics submitted a joint proposal in an internal university competition for research enhancement, to strengthen activity at the intersection of astrophysics and nuclear/particle physics. The proposal received top ranking and is approved for funding. This outcome provides for a new faculty line in astronomy/astrophysics and guarantees replacement of two faculty retirements in nuclear physics (one in theory and one in experiment) which will be redirected to nuclear astrophysics.

Funding from this initiative will additionally support Ohio University's entry as a partner in the MDM Observatory on Kitt Peak. Ohio U is acquiring a one-twelfth share in the observatory from Dartmouth College, with the transaction expected to be complete by the start of 2005.

One further pending change is the retirement of Louis Wright, who has served as Department Chair for the last 14 years. Joe Shields has been chosen to serve as Wright's successor.

J. Shields, 11/01/04

Department of Astronomy

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The Department of Astronomy of The Ohio State University currently has 15 faculty members in Astronomy, 6 Physics faculty with joint or courtesy appointments, 2 research scientists, 1 lecturer, 5 postdoctoral researchers, 10 staff in the Imaging Sciences Laboratory, and 26 graduate students. An office staff of 3 full-time employees and two computer systems staff provide administrative and computer support.

The three primary areas of research are ground and space-based observations, theoretical astrophysics and cosmology, and astronomical instrumentation. Research programs span the range from searches for extrasolar planets to the nature of the early Universe.

OSU is a one-eighth partner in the Large Binocular Telescope (LBT), which is being completed on Mt. Graham. Thanks to an award from Research Corporation, OSU will have one sixth of the observing time on the telescope. The LBT, with its twin 8.4-m mirrors on a 23-m baseline, will be the world's largest optical/IR telescope on a single mount when it is completed. As part of its contribution to this project, Ohio State has developed an *in situ* mirror aluminization facility and is currently constructing the Multi-Object Double Spectrograph (MODS), which will provide low- and medium-resolution spectroscopy (R = 2000-8000) and imaging across the entire 330-1100 nm band in a 6×6-arcminute field of view. OSU also has a one-quarter share of the MDM Observatory, with its 2.4-m and 1.3-m telescopes and instruments on Kitt Peak, in partnership with Columbia, Dartmouth, and Michigan. OSU's capital investment in MDM and LBT will exceed $16M by the time LBT construction is completed.

Five years ago, the Department moved into new office and laboratory facilities, providing space for the expanding activities of the Astronomy Department.

Education is a main part of the department's program, consistent with Ohio State's mission as a land-grant university. Total enrollment in astronomy courses for 2003-04 exceeded 3500, with more than 3000 students enrolled in our introductory, two-course sequence for non-majors.

We have made an intensive effort to strengthen our graduate program, and the results are evident through the success of our students in the excellent postdoctoral positions they are obtaining upon graduation.

At the present time, the Department has $6M in externally funded awards (nearly $10M including the joint appointments from Physics). Total research expenditures in FY 2003 were $1.9M.

11/1/2004

Penn State Astronomy & Astrophysics Fact Sheet

Department of Astronomy & Astrophysics

- 16 tenured and tenure track faculty; currently 3 vacancies
- 2 Senior Research Associates
- 3 joint appointments with Physics
- 2 Instructors
- 28 Research Associates and Postdoctoral Associates
- 19 Research & Administrative Staff
- 30 Graduate Students
- 32 Undergraduate Students

The department teaches largest number introductory astronomy non-science majors students according to both the Fall 2003 and 2004 American Institute of Physics statistics.

Research Programs

- Instrument Development - (gamma ray, X-ray, ultraviolet, optical, infrared)
- Exosolar Planet Searches
- Multiwavelength Observational Studies
- High-energy Theoretical Studies
- Gravitational Astrophysics
- Stellar Astrophysics & Star Formation
- Active Galactic Nuclei
- Observational Cosmology
- Theoretical Cosmology
- Astro-Statistics

Research Highlights

- Penn State University is the PI institution under the leadership of Professor **John Nousek**, of the Swift X-ray telescope (XRT) and the Swift Ultraviolet and Optical Telescope (UVOT). The Swift satellite control center is located at Penn State University.
- Evan Pugh Professor **Gordon Garmire** is the PI of the Advanced CCD Imaging Spectrometer (ACIS) instrument on the Chandra X-ray observatory
- The Chandra Deep Field North, the most sensitive view ever obtained of the X-ray sky, is lead by Professor **Neil Brandt**.
- Professor **Donald P. Schneider** chairs the quasar science group on for the Sloan Digital Sky Survey and is the publication manager. ***Professor Schneider is the 6th most cited Astronomer!***
- Penn State is the originator of the concept for the Hobby Eberly telescope (HET) and has played a leadership role in its design, construction and commissioning. It is currently engages in a wide range of astrophysical research using its ~25% share of the HET.
- The department is closely associated the ***Institute for Gravitational Physics and Geometry*** with Professor **Pablo Laguna** serving as an associate director and four other faculty participating.
- Evan Pugh Professor **Alex Wolszczan**, discoverer of the first extrasolar planet, is involved in the Space Interferometer Mission (SIM).
- Distinguished Professor **Peter Meszaros** leads a major center of activity on the theory of gamma-ray bursts and high energy astrophysics.

Rutgers University, Department of Physics & Astronomy

Rutgers, The State University of New Jersey, is located in New Brunswick, which about half-way between Princeton and New York City. It is a large university with about 35 000 undergraduate students. The astro group at Rutgers has developed strong contacts with Princeton, and has contacts with the many other universities in the greater NY area.

The large ($\sim$ 62 faculty) Physics & Astronomy Department includes a group of 10 astronomy faculty. The Astro group is actively supported and nurtured by the rest of the Department, and by the Dean, as it has been for almost 30 years. The long-range plan calls for replacement of departing faculty and growth of the group by a few additional lines over the next five years. In addition to the 10 tenure-track faculty, there is one grant-funded research faculty member. Two astro faculty members, Côté and Ferrarese, are on leave of absence at DAO right now.

Chuck Keeton started as a new assistant professor this Septemeber, and we are currently advertising for a new faculty member to replace Merritt who left last year. We anticipate replacing a retirement in the next 1-2 years, hiring another to enlarge the group, and the Dean would expect us to replace any others who may leave.

There are two major research initiatives underway. We have a 10% share in the Southern Africa Large Telescope, which is modeled on the Hobby-Eberly Telescope at McDonald. It is now undergoing engineering tests which are indicating that it is working well. The main prime-focus imaging spectrograph is due to be installed early 2005, and science operations to begin a few months later.

The other initiative involving several astronomers at Rutgers is the Atacama Cosmology Telescope, which is to measure small-scale temperature fluctuations in the CMB over a 200 square degree strip of sky. This is a joint NSF-funded effort by Princeton, U Penn, and Rutgers. One result will be the detection of over 1000 galaxy clusters through the SZ effect, and Rutgers will follow-up with SALT to get redshifts.

The number of posdocs varies from 2 to 4, with the level of grant support. One concern we have is that we find it hard to attract well-qualified postdocs to grant-funded positions.

The joint Physics & Astronomy graduate program has slightly different options for Astronomy from Physics, especially in course requirements. Students admitted to the program are guaranteed 6 years of support, as long as they are making good progress, and can choose an advisor from any of the groups in physics or astronomy. Many students are admitted hoping to do string theory or condensed matter theory (areas of recognized strength) and switch later to other groups, especially astronomy when they realize how much fun it is.

There are currently 12 graduate students working on PhDs with astro faculty members, and a few more beginning students have interests in astronomy. On average, we produce two new PhD graduates in astronomy annually. We offer 8 graduate level courses: two introductory courses on stars and galaxies for those with no previous astronomy training, and advanced courses in galactic dynamics, cosmology, ISM, fluids & plasmas, HE astro and observing techniques. The 6 advanced course are offered over a 3-year cycle and we encourage all astro students to take them – they are required to take 3.

We have recently implemented an undergraduate major in Astrophysics, which differs from the "professional" major in physics mostly in the final year options. It does include both optical and radio observing lab courses. We hope eventually to have about 10 majors annually.

Graduate Program

Department of Astronomy

The Department of Astronomy at the University of Texas is one of the largest in the United States, with twenty-two active teaching faculty, seventeen research scientists, a number of research associates and postdoctoral fellows, and about 45 graduate students. The research activities of the faculty and staff span virtually all of modern astronomy.

In recent years the faculty have won five of the major awards of the American Astronomical Society, as well as numerous other honors and fellowships, placing the Department among the top few American astronomical institutions. The low student-teacher ratio allows students to work closely with experts in their field of interest.

The association between the Department of Astronomy and McDonald Observatory provides excellent opportunities in optical astronomy.

We offer strong programs in millimeter and submillimeter astronomy, infrared astronomy, radio astronomy, space astronomy, and theoretical astrophysics. Collaborations with groups in physics, aerospace engineering, electrical engineering, computer science, and geological science are also common.

Visiting scientists from around the world join our astronomers in research; astronomers and graduate students, in turn, frequently use national radio and optical observatories and facilities elsewhere.

McDonald Observatory

The Observatory complex is located 450 miles west of Austin in the Davis Mountains, one of the darkest sky areas in the continental United States. At present, there are four operating telescopes: 9.2-m Hobby*Eberly Telescope (HET), 2.7-m Harlan J. Smith Telescope, 2.1-m Otto Struve Telescope, and the 0.8-m Telescope. The HET is an innovative departure from classical telescope design and is dedicated primarily to the spectroscopic analysis of light.

The Observatory is equipped with a wide range of state-of-the-art instrumentation for optical and infrared imaging and spectroscopy, as well as operating one of the first and most productive lunar ranging stations.

In addition to its own facilities, McDonald Observatory has a share in a submillimeter wave telescope on Mauna Kea. Our astronomers and students also make frequent use of national and international facilities, including the Hubble Space Telescope and the NASA Infared Telescope Facility. The Whole Earth Telescope project, led by Texas astronomers, involves simultaneous observations on telescopes worldwide.

Graduate students typically receive about 25% of the nights on the two largest telescopes at McDonald, with additional time being granted to their advisors for joint projects. Students doing dissertation research receive high priority on all telescopes.

Austin Facilities

The University of Texas at Austin is a leading institution of higher education and research, the largest state-supported university, and the oldest and largest of the

University of Texas System. It is second only to Harvard in the number of endowed faculty positions and many of the faculty are members of the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences, as well as Pulitzer or Nobel Prize winners.

The University offers many excellent facilities and resources to graduate astronomy students. The University of Texas at Austin has the sixth largest academic library system in North America, the fifth largest in the United States, with more than eight million volumes. Robert Lee Moore Hall is home to a large Physics-Math-Astronomy Library and the Astronomy Department itself houses a wealth of astronomical reference materials in the Péridier Library. A 16-inch telescope on the roof of Robert Lee Moore Hall and a 9-inch telescope in nearby T.S. Painter Hall offer students and the public an introduction to the night sky. The Astronomy Department and the Observatory also offer up-to-date computer facilities, including sophisticated networks of workstations and personal computers. Machine and electronic shops, as well as specialized equipment, are also available.

Department Summary Information
Astronomy Chairs Meeting, Chicago, Nov 2004

Department of Physics & Astronomy, University of Toledo, Toledo, OH 43606

Type: Combined Physics and Astronomy

Degrees: B.S. Physics (with optional Astrophysics concentration)
B.A. Physics
B.A. Astronomy
M.S. Physics (with option of Astronomy research component)
M.S.E. (science education)
Ph.D. Physics (with option of Astronomy research component)

Tenure track Faculty: 23 total (8 are astronomers);
Full/Assoc/Asst distribution: 16/5/2 (6/2/0 astronomers)

Students: 44 undergraduate majors (16 astronomy or astrophysics)
52 graduate students (16 astronomy research)

Facilities:

- Observatory, 1-m reflecting telescope w/ high dispersion fiber-fed échelle spectrograph and low dispersion fiber-fed spectrograph; on campus, used for research; new NSF PREST grant just awarded – will provide CCD upgrade, student training, and astronomy community access for spectroscopic observations
- Astronomy faculty and student offices are in the observatory building (on campus, next door to main physics building)
- Laboratory astrophysics facilities
- Heavy-ion accelerator
- Planetarium (in observatory building)
- 6-inch refractor for public observing and student labs (roof of main physics bldg)

Other relevant info:

- Hiring 3 (new faculty lines) tenure-track astronomers in next 3 years (one per year) as part of provost initiative to enhance astronomy/astrophysics program; current search underway in star formation/IR observation – remaining hires expected to be in extragalactic astronomy and astronomical instrumentation
- Hiring 2 (new faculty lines) tenure-track physicists in thin films/photovoltaics in next 3 years as part of provost initiative to enhance advanced thin films area
- Will likely be hiring a few additional faculty to replace upcoming retirements
- Goal of joining telescope consortium for access to large telescope - planning for this is in early stages
- Seeking to increase numbers of both undergraduate and graduate students

Vanderbilt University

VANDERBILT UNIVERSITY

Astronomy at Vanderbilt is housed in the Department of Physics and Astronomy. It is a small program, consisting of 3 faculty members (all observers) within a total department size of 28. At the undergraduate level, we offer an Astronomy minor (normally taken concurrently with a physics major); we have no astronomy major program. At the graduate level, students can do their thesis research entirely in astronomy, but they receive a Ph.D. in Physics, not a Ph.D. in Astronomy. We are currently a member of the SMARTS consortium, and I am interested in finding creative ways to help our astronomers finance continued participation in this consortium.

Astronomy at Vanderbilt has always been a very small program, although with some interesting history: both Seyfert (of Galaxy fame) and Barnard (of Barnard's star) were on the faculty at Vanderbilt.

VASSAR COLLEGE DEPARTMENT OF PHYSICS & ASTRONOMY

Faculty:
5 physicists
2 astronomers
1 into lab instructor

Students: (undergraduates only)
Degrees: Physics, Astronomy, or Astronomy + Physics
Typically 10 seniors/year, 4 in astronomy or astronomy+physics; 3-4 go to grad school

Course enrollments (teaching load 5 courses/year):
150 total in intro astronomy courses:

- planets
- stars, galaxies, & cosmology
- life in the universe

5-12 in upper level astrophysics or observational courses:

- stellar astrophysics
- astrophysics of galaxies
- astrophysics of the ISM
- planets
- two levels of observational astronomy

Facilities:
On-campus observatory, including 32", 20" reflectors, 8" refractor; ccd + spectrograph capabilities. (about 10 students/year employed at the observatory for their campus financial aid job)

Research opportunities for students:
Part of Vassar's Undergraduate Research Summer Institute

- Research for Vassar students for 10 weeks in summer
- Student symposium in fall for research presentations

Part of Keck Northeast Astronomy Consortium (funded by Keck foundation for 10 years, now funded by NSF REU program for 2 years), which includes Wellesley, Williams, Wesleyan, Swarthmore, Haverford, Colgate, Middlebury, and Vassar

- Summer student exchange
- Annual student symposium for research presentations

Senior thesis optional; about 1/year plus 1-2/year sophomores, juniors doing research during academic year for course credit or for pay

Main concern for chairs meeting:
Finding jobs for B.A. students; getting students into appropriate grad schools

Main department concern: lack of unix support from College

New job opening:
Seeking experimental physicist (lasers, optics, solid state…)

University of Virginia Astronomy Profile

Robert T. Rood, November 6, 2004

Statistics

Status: Separate astronomy department in a "state" university. (Only 8% of UVa's budget now comes from the state.)

Faculty: 14 teaching faculty; 6 research faculty

Graduate students: 30 graduate students, up from 20 in 2000. Roughly 3 PhD's/year

Undergraduates: Roughly 10 BA's/year with a 50/50 split between Astronomy/Physics and Astronomy-lite. 2800 students per year in general education courses.

Research

Research interests are roughly half theoretical and half observational/experimental. The department has benefited greatly fro a $10M (spread over 10 years) gift from Frank Levinson (UVa Astronomy PhD 1980). This has insulated the department somewhat from drastic state budget cuts. We have joined the LBT project and obtained time on other Steward Observatory facilities and have started a modest effort in near-IR instrumentation. The 31" and 40" telescopes at our local Fan Mountain Observatory have had major instrument upgrades.

The presence of the NRAO scientific offices and eventually the ALMA Science Center makes Charlottesville one of the largest astronomical communities in the country.

Graduate Program

Our program is fairly traditional: typically 2 astronomy and one physics course per semester for the first two years; written qualifying exams in January of the first and second years. We have introduced some courses in instrumentation in conjunction with NRAO, and we are gently urging even non-instrumentalists to get some experience in instrumentation.

Undergraduate Program

Perhaps the most novel aspect of our undergraduate program is the large number of general education courses directed toward non-science majors: 6 lecture; 1 observational; 2 seminar. We typically have an enrollment of 2800 student-semesters/year in a school with roughly 3000 entering students/year. This leads to a very large minors program with 30 graduating in 2004. Our majors program emphasizes independent research. The best of our majors are very good indeed.

Education and Public Outreach (E/PO)

With the Levinson gift we have hired an E/PO faculty member. We are in the process of converting the 1885 Leander McCormick Observatory with its 26" Clark refractor and the adjacent observatory director's house into a science education center. We have several active programs with K-12 teachers. Educational supplements to NASA and NSF grants are used to develop exhibits at LMO and shows at the Science Museum of Virginia in Richmond and the children's Discovery Museum in Charlottesville.

College of Arts & Sciences
UNIVERSITY OF WASHINGTON

Department of Astronomy

Astronomy is the quest to make the Universe comprehensible—an adventure into the beginning of time and through the infinite recesses of space. We ask how stars and solar systems form and evolve, how galaxies form, how the elements arose, and probe the origin and structure of the Universe. Along the way we challenge and enrich physics and chemistry with our discoveries.

STUDENTS (AUTUMN 2003)

77 undergraduate majors

26 PhD students

DEGREES AWARDED (2002-2003)

34 Bachelor of Science degrees

6 Master of Science degrees

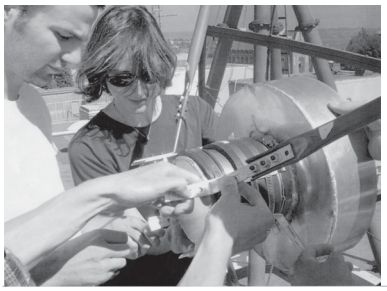
5 PhD degrees

AREAS OF RESEARCH INCLUDE:

- Growth and structure of the solar system; stability of planetary orbits; extrasolar planets
- Astrobiology and conditions for finding life elsewhere
- Stellar structure and evolution
- Astrophysics: dark matter, energy, gravitation, radiation physics, relativistic accretion disks
- Nucleosynthesis: particle astrophysics, solar neutrinos
- Formation and evolution of structure of the Milky Way and other galaxies
- Mapping the large-scale structure of the Cosmos and the Galactic Halo
- Multiple star systems: mass-exchange binaries, high-energy emissions, clusters, and stellar dynamics
- Stellar exotica: flare stars, very low-mass stars, stellar winds and outflows

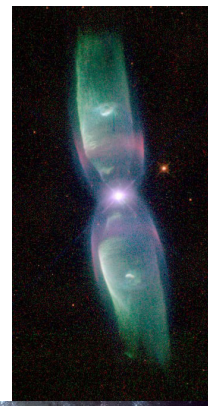
Education

The Astronomy Department provides the most engaging and challenging of research opportunities covering the spectrum of modern astrophysics. Courses provide the background; the close, diverse community of learning provides the excitement; and the array of observational and computational tools provide the opportunities for everyone to participate and learn together.



Our undergraduate program is one of the largest in the nation with more than 70 declared majors, nearly all of whom also major in physics. Many non-majors also enroll in astronomy courses, with annual course enrollments totaling 12,600 for 2001-2002. Our graduate program was rated by students across the nation, in the 2001 National Doctoral Program Survey, as the best in the U.S. All graduate students receive full financial support.

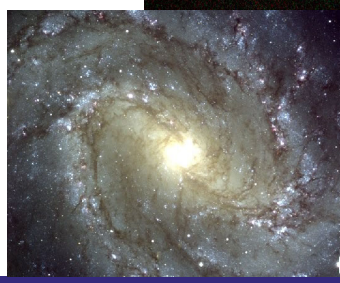
Research



The Department of Astronomy currently has 78 active research grants totaling $3.4 million throughout their lifetime.

Astronomy faculty have leading roles in two major telescope projects: the 3.5-m general-purpose telescope and the 2.5-m Sloan Digital Sky Survey, both in the high mountains of New Mexico. Faculty, postdocs, and students are major users of national telescopes in space (such as the Hubble Space Telescope) and on the ground (such as the Gemini Telescopes).

The Department is a founding partner of an 8.4-m telescope that will survey the sky frequently and to unprecedented depth, known as the Large Synoptic Survey Telescope (LSST), with various partner institutions around the U.S. (see lsst.org). The goal of the LSST is to probe the structure and evolution of the solar system, our Milky Way Galaxy, and the structure and expansion of the cosmos to understand their origins and evolution.



Astronomy faculty and students collaborate with colleagues in other UW departments and programs including Physics, Astrobiology, Earth & Space Sciences, Computer Sciences & Engineering, and History.

Faculty

Department of Astronomy faculty serve in leadership positions in many national and international projects such as the Hubble Space Telescope, new satellites in NASA's pipeline, huge new telescopes on the ground, and the UW Astrobiology program. Two faculty recently received the highest career achievement awards from the national professional societies of the U.S. and Germany.

Faculty honors include:

2 National Academy of Sciences members

4 American Association for the Advancement of Science fellows

1 Henry-Norris Prize for distinguished career accomplishment from the American Astronomical Society

1 Karl Schwarzschild Medal for distinguished career accomplishment from the Astronomische Gesellschaft of Germany

1 Sloan Research Fellow

Outreach

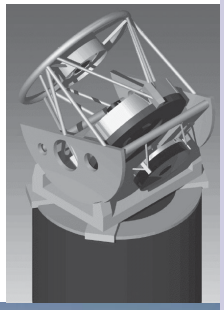
Undergraduates, with guidance from a faculty advisor, offer bi-monthly viewing nights for the public at the UW's Observatory, including talks about the night sky and modern astronomical research. More than 3,000 visitors attended in 2003.

Project AstroBio, now in its fifth year, brings astronomy faculty and graduate students into K-12 classrooms for multiple visits to help with hands-on astronomy projects and curriculum development.

The department invites K-12 students to campus for planetarium shows led by undergraduates. More than 25 school groups participated in 2002-2003.

Fiscal Information

Budget for 2002-2003: $2.5 million
State support in 2002-03: $1.8 million
Public and private grant support in 2002-03: $700,000



Above: Concept sketch of the 8.4-m Large Synoptic Survey Telescope (LSST). The University of Washington is a founding partner in this national project.

Right: Apache Point Observatory, with 2.5-m telescope of the Sloan Digital Sky Survey at lower left and 3.5-m general purpose telescope at upper right.

FACULTY AND RESEARCHERS (SPRING 2003)

7	Professors
1	Research Professor
1	Associate Professor
2	Assistant Professors
1	Research Assistant Professor
2	Lecturers
4	Adjunct Professors from other departments on campus
2	Affiliate Professors from local industry and other universities
8	Research Postdocs
26	Graduate Students

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last update: November 2003

Astronomy Department, Wesleyan University

Faculty: Bill Herbst, Professor, Chair (T Tauri stars); John Salzer, Professor (dwarf galaxies); Kathryn Johnston, Ass't Prof (galactic dynamics); Ed Moran, Ass't Prof. (X-ray astronomy).

Post-Docs/Staff: We currently have 3 post-docs, 1 facilities and computer support person and a department administrator.

Students: 10 undergraduate majors; 8 graduate students (M.A. only)

Facilites: Van Vleck Observatory (0.6m telescope for photometric monitoring; 0.5 m refractor of historical interest; 0.4 m telescope for public/student use); access to a 90 cpu Beowulf cluster; partner in the WIYN 0.9m consortium

Associations/Outreach: We are a member of the Keck Northeast Astronomy Consortium which operates an REU program, and also are the host institution for Project ASTRO-CT.

Profile: Wesleyan is among the most selective private undergraduate institutions in the country enrolling 2800 students and also has a small Ph.D. program enrolling about 150 students, primarily in the sciences. A student can major in Astronomy alone, but almost all who do so are double majors in Physics. We typically have 2-5 undergraduate majors per year of whom about half go to graduate school. As an institution we are among the leaders in the country in percentage of students who go on to graduate education.

The Physics Department has a Ph.D. program and recently awarded its first degree to an astronomy student; however, we do not actively seek astronomy Ph.D. candidates. The Astronomy Department offers an M.A. program (but no Ph.D.) with space for 2-4 students per year; we do seek applicants for these spots.

The university and department pride themselves on being the "perfect mix" of research and teaching. Our faculty members are active researchers who compete successfully for grant support and observing time on competitive facilities and maintain active research programs that can involve undergraduate and M.A. students. They also must be excellent (or at least very good) teachers to receive tenure at Wesleyan and good teaching is highly valued and expected at our institution. It factors heavily into tenure, promotion and salary considerations.

Master's Program: We do seek promising students who got a late start in preparing for admission to a Ph.D. astronomy program (e.g. they did not start taking physics courses until their sophomore year and may, consequently, not do well on the Physics GRE exam), for admission to our M.A. program. We are a "second chance" for such students who might otherwise be unable to continue on to a Ph.D. This aspect of our program has been successful and we have sent many such students on to Ph.D. schools. Our application deadline is March 1, so if talented but somewhat under-prepared students show up in your Ph.D. applicant pool, please keep us in mind.

Williams College

Description of the Astronomy Program at Williams College Williamstown, Massachusetts

Williams College is an undergraduate liberal-arts college of 2100 students studying for B.A.'s. Only two small master's programs, in art history and in development economics, award higher degrees. In the Astronomy Department, we have two professors and one instructor/observatory supervisor; all have Ph.D.'s in astronomy. This year, one of the professors on leave and is replaced by a visiting professor.

Williams has a long tradition in astronomy, dating back to the construction of its Hopkins Observatory in 1836-8. It is the oldest extant observatory in the United States.

We are part of the Keck Northeast Astronomy Consortium, which also includes Middlebury, Wesleyan, Wellesley, Colgate, Vassar, Swarthmore, and Haverford. All are highly rated colleges with excellent students; Williams is again first among liberal-arts colleges in this year's U.S. News & World Report ratings. Our KNAC Consortium was supported by the Keck Foundation for a dozen years until this year; we have just received an NSF REU grant for the immediate future. As part of the KNAC's annual fall symposium, last week, about 30 students presented research papers and an additional 40 students participated along with 20 combined faculty.

We have a 24" DFM telescope on the roof of our Physics/Astronomy building; the students in the elementary courses use it to make CCD images. We have a small planetarium and have recently gained authorization to upgrade it, most likely with a Zeiss ZKP3/B plus some digital facilities.

Our research is all done in the field, at major observatories or on expeditions including those to total solar eclipses, to the transit of Venus, and to occultations by Triton, Pluto, and Charon of stars. Students participate fully in these expeditions. Recent research and expeditions have been supported by NSF, NASA, and National Geographic.

Recent alumni are in graduate programs in astronomy or planetary science at Berkeley, UCLA, Maryland, Wesleyan, and Yale (2); and in physics or atmospheric sciences at Harvard, Berkeley, Maryland, and elsewhere. Some other alumni are teaching physics and astronomy in private schools.

Recent numbers of astrophysics and astronomy majors: Class of

- 2000: 5
- 2001: 8
- 2002: 9
- 2003: 7
- 2004: 10
- 2005: 4
- 2006: 5

See http://www.williams.edu/astronomy/

Wisconsin-Madison, University of

Dept of Astronomy, U. of Wisconsin-Madison

Degree programs are BS (Astronomy-Physics, average 10 graduates/year) and PhD (Astronomy, average entering class of 4).

14 faculty, plus 2 emeriti on campus; new hire Andrew Sheinis (Lick, instrumentation) arrives in Fall 2005. In Physics dept, Astrophysics group adds another 6 faculty, plus 3 (PI Halzen + 2) working on IceCube Antarctic neutrino telescope.

Research areas: * indicates those _not_ expecting to retire within 5 years. interstellar medium observation/theory (Savage, Reynolds, Nordsieck/Zweibel*, Lazarian*); massive/low-mass stars (Churchwell, Cassinelli/Mathieu*); nearby/distant galaxies (Wilcots*, Gallagher*, Sparke*/Hoessel*, Bershady*/Barger*)

Recent Prizes: Faculty: Reynolds AAS Tinsley prize (innovation) 2004, Barger AAS Pierce prize (young observer) 2002. PhDs 2000-2004: Stassun (2000), Hubble Fellowship; Conselice (2002) and Hoffman (2003) NSF Astronomy and Astrophysics Postdoc Fellowships; Pisano (2000) and Madsen (2004) NSF MPS Distinguished International Fellowships. Miller, Watson and Stassun now in faculty jobs.

Telescope consortia:
26% partner in *WIYN* (Wisconsin-Indiana-Yale-NOAO) consortium: 3.5-meter telescope on Kitt Peak, associated consortium operates the KP 0.9-m. the 3.5-meter began science operations in 1995, and produces images as good as any telescope in the continental US. Hydra multi-object spectrograph and "densepak" and "sparsepak" fiber-bundle IFUs are near-unique instrumentation. QUOTA (1/4-deg*1/4-deg imager based on orthogonal-charge-transfer (OT) CCDs to "do tip-tilt on the chip") funded and in progress; proposals for WHIRC (2k-square near-IR imager) and One Degree Imager based on OTCCDs pending.

2nd largest partner after S. Africa in *SALT* (Southern African Large Telescope), an 11-meter improved version of the Hobby-Eberly Telescope at Sutherland, S. Africa. We are about a 17% partner, depending on Rand/$ exchange rate; PI Nordsieck will deliver SALT's main first-light instrument, the Prime Focus Imaging Spectrograph, in early 2005 as our main contribution. This medium-resolution spectrograph has high throughput, blue sensitivity like VLT/UVIS, polarimetry, Fabry-Perot imaging, and fast readout capability.

Member of US Square Kilometer Array consortium.

Our Space Astronomy Lab builds rocket payloads, software for WIYN Telescope control system, digital Star Tracker that is now NASA's standard for pointing rocket payloads, etc.

Undergraduate and graduate program:
Our undergraduates go to top graduate programs and excellent faculty jobs.

In 2002 we began an NSF-funded summer REU program jointly with the Astrophysics group in Physics dept: 33 students in 2002-4 with NSF and UW Graduate School funds, 42% under-represented minorities, 54% women. We hope some of these students will later join our PhD program.

Mathieu is PI for $10M NSF Center for Integration of Research, Learning and Teaching (in Wisconsin Center for Education Research).

Public Outreach:
Off-campus outreach center "Space Place" in South Madison started in 1990; now 2 full-time staff. Campus administration likes this outreach to an underserved community, and fills gaps in our outreach grant funding. Statewide outreach through "Universe in the (State) Park' telescope viewing sessions on summer weekends.

In 2002 we started a Board of Visitors (10 UW alumni and friends) to help the department with fundraising.